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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,288	11/14/2006	Yukihiko Mogi	278094US6PCT	9538
22850	7590	10/18/2007	EXAMINER	
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			JEANGLAUME, JEAN BRUNER	
ART UNIT		PAPER NUMBER		
2819				
NOTIFICATION DATE		DELIVERY MODE		
10/18/2007		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/550,288	MOGI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jean B. Jeanglaude	2819	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### **Status**

- 1) Responsive to communication(s) filed on 11-14-06.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### **Disposition of Claims**

- 4) Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-57 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### **Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 22 September 2005 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### **Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### **Attachment(s)**

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date 9-22-05;5-01-07.
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application
- 6) Other: \_\_\_\_\_.

**DETAILED ACTION**

**Specification**

It is suggested to insert on Page 1, line 1 a subtitle for the continuing data and insert below the subtitle the continuing data information.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 - 14, 29 – 55, 57 are rejected under 35 U.S.C. 102(b) as being anticipated by Hellberg (US Patent Number 6,462,682).

3. Regarding claims 1, 46, Hellberg discloses a sampling rate converter and method (figs. 1 – 18) comprising: an up sampler (24, fig. 18) for inserting U-1 zero points between sample signals and raising a sampling frequency U-fold, a convolution processing unit (12, fig. 18) including an FIR filter and performing predetermined convolution processing with respect to an output signal of the up sampler (paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, lines 43 – 58; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67), and a linear interpolation block for selecting two points of samples with respect to the results of processing of the convolution processing unit and finding a value at a required position from the linear interpolation (col. 1, lines 29 – 41), wherein the FIR filter of the convolution processing unit is an FIR filter where an impulse response is expressed by a finite time length, the impulse

response becomes a filter coefficient, and a transmission function  $H(z)$  is associated with a transmission function  $Z(z)$  of a pre-filter, and the filter coefficient is set by performing weighted approximation with respect to a desired characteristic in relation to a frequency response of the pre-filter (col. 1, lines 29 – 65; paragraph bridging col. 1 and 2; col. 3, lines 25 – 49; paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67 ).

4. Regarding claims 6, 47, Hellberg discloses a sampling rate converter (figs. 1 – 18) comprising: an up sampler (24, fig. 18) for inserting  $U-1$  zero points between sample signals and raising a sampling frequency  $U$ -fold, a convolution processing unit (12, fig. 18) including an FIR filter and performing predetermined convolution processing with respect to an output signal of the up sampler (paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, lines 43 – 58; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67), and a linear interpolation block for selecting two points of samples with respect to the results of processing of the convolution processing unit and finding a value at a required position from the linear interpolation (col. 1, lines 29 – 41), wherein the FIR filter of the convolution processing unit is an FIR filter where an impulse response is expressed by a finite time length, and the impulse response becomes a filter coefficient, and the filter coefficient is set by performing weighted approximation with respect to a desired characteristic using an algorithm adding a restrictive condition so as to pass any frequency point (col. 1, lines 29 – 65; paragraph bridging col. 1 and 2; col. 3, lines 25 – 49; paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67 ).

5. Regarding claims 10, 48, Hellberg discloses a sampling rate converter and method (figs. 1 – 18) comprising: an up sampler (24, fig. 18) for inserting U-1 zero points between sample signals and raising a sampling frequency U-fold, a convolution processing unit (12, fig. 18) including an FIR filter and performing predetermined convolution processing with respect to an output signal of the up sampler (paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, lines 43 – 58; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67), and a linear interpolation block for selecting two points of samples with respect to the results of processing of the convolution processing unit and finding a value at a required position from the linear interpolation (col. 1, lines 29 – 41), wherein the FIR filter of the convolution processing unit is an FIR filter where an impulse response is expressed by a finite time length, the impulse response becomes a filter coefficient, and a transmission function  $H(z)$  is associated with a transmission function  $Z(z)$  of a pre-filter, and the filter coefficient is set by performing weighted approximation with respect to a desired characteristic in relation to frequency points to be passed and a frequency response of the pre-filter (col. 1, lines 29 – 65; paragraph bridging col. 1 and 2; col. 3, lines 25 – 49; paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67 ).

6. Regarding claims 29, 34, 49, Hellberg discloses a sampling rate converter (figs. 1 - 18) comprising: a convolution processing unit (12, fig. 18) including poly-phase filters able to set different filter coefficients obtained by poly-phase decomposing a predetermined FIR filter and performing convolution processing of input sample signals

and a poly-phase filter having a selected coefficient (paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, lines 43 – 58; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67), a selector for selecting two points of samples required for an output sample and selecting the coefficient of the corresponding poly-phase filter, and a linear interpolation block for finding the value at the required position from linear interpolation, wherein the FIR filter is an FIR filter where an impulse response is expressed by a finite time length, the impulse response becomes the filter coefficient, and a transmission function  $H(z)$  is associated with a transmission function  $Z(z)$  of a pre-filter, and the filter coefficient is set by performing weighted approximation with respect to a desired characteristic in relation to a frequency response of the pre-filter (col. 1, lines 29 – 41; col. 1, lines 29 – 65; paragraph bridging col. 1 and 2; col. 3, lines 25 – 49; paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67 ).

1. Regarding claims 35, 50, Hellberg discloses a sampling rate converter (figs. 1 – 18) comprising: a convolution processing unit (12, fig. 18) including poly-phase filters able to set different filter coefficients obtained by poly-phase decomposing a predetermined FIR filter and performing convolution processing of input sample signals and a poly-phase filter having a selected coefficient (paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, lines 43 – 58; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67), a selector for selecting two points of samples required for an output sample and selecting the coefficient of the corresponding poly-phase filter, and a linear interpolation block for finding the value at the required position from linear

interpolation, wherein the FIR filter is an FIR filter where an impulse response is expressed by a finite time length, and the impulse response becomes the filter coefficient, and the filter coefficient is set by performing weighted approximation with respect to a desired characteristic using an algorithm adding a restrictive condition so as to pass any frequency point (col. 1, lines 29 – 41; col. 1, lines 29 – 65; paragraph bridging col. 1 and 2; col. 3, lines 25 – 49; paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67 ).

2. Regarding claims 40, 45, 51 – 54, Hellberg discloses a sampling rate converter and method (figs. 1 – 18) comprising: a convolution processing unit (12, 18) including poly-phase filters able to set different filter coefficients obtained by poly-phase decomposing a predetermined FIR filter and performing convolution processing of input sample signals and a poly-phase filter having a selected coefficient (paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, lines 43 – 58; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67),, a selector for selecting two points of samples required for an output sample and selecting the coefficient of the corresponding poly-phase filter, and a linear interpolation block for finding the value at the required position from linear interpolation (col. 1, lines 29 – 41), wherein the FIR filter is an FIR filter where an impulse response is expressed by a finite time length, the impulse response becomes the filter coefficient, and a transmission function  $H(z)$  is associated with a transmission function  $Z(z)$  of a pre-filter, and the filter coefficient is set by performing weighted approximation with respect to a desired characteristic in relation to frequency points to be passed and a frequency response of the pre-filter (col. 1, lines 29 – 41; col. 1, lines

29 – 65; paragraph bridging col. 1 and 2; col. 3, lines 25 – 49; paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67 ).

3. Regarding claim 55, Hellberg discloses an audio apparatus including a sampling rate converter (figs. 1 – 18) comprising: an up sampler (24, fig. 18) for inserting U-1 zero points between sample signals and raising a sampling frequency U-fold, a convolution processing unit (12, fig. 18) including an FIR filter and performing predetermined convolution processing with respect to an output signal of the up sampler (paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, lines 43 – 58; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67), and a linear interpolation block for selecting two points of samples with respect to the results of processing of the convolution processing unit and finding a value at a required position from the linear interpolation (col. 1, lines 29 – 41), wherein the FIR filter of the convolution processing unit is an FIR filter where an impulse response is expressed by a finite time length, the impulse response becomes a filter coefficient, and a transmission function  $H(z)$  is associated with a transmission function  $Z(z)$  of a pre-filter, and the filter coefficient is set by performing weighted approximation with respect to a desired characteristic in relation to a frequency response of the pre-filter (col. 1, lines 29 – 65; paragraph bridging col. 1 and 2; col. 3, lines 25 – 49; paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67 ).

4. Regarding claim 57, Hellberg discloses an audio apparatus including sampling rate converter (figs. 1 – 18) comprising: a convolution processing unit (12, 18) including

poly-phase filters able to set different filter coefficients obtained by poly-phase decomposing a predetermined FIR filter and performing convolution processing of input sample signals and a poly-phase filter having a selected coefficient (paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, lines 43 – 58; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67), a selector for selecting two points of samples required for an output sample and selecting the coefficient of the corresponding poly-phase filter, and a linear interpolation block for finding the value at the required position from linear interpolation (col. 1, lines 29 – 41), wherein the FIR filter is an FIR filter where an impulse response is expressed by a finite time length, the impulse response becomes the filter coefficient, and a transmission function  $H(z)$  is associated with a transmission function  $Z(z)$  of a pre-filter, and the filter coefficient is set by performing weighted approximation with respect to a desired characteristic in relation to frequency points to be passed and a frequency response of the pre-filter (col. 1, lines 29 – 41; col. 1, lines 29 – 65; paragraph bridging col. 1 and 2; col. 3, lines 25 – 49; paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67 ).

5. Regarding claims 2, 10, 11, 30, 36, 41, Hellberg discloses a sampling rate converter (figs. 1 – 18) wherein the filter coefficient is set based on an amplitude characteristic of an equalizer obtained by performing weighted approximation with respect to a desired characteristic in relation to a frequency response of the pre-filter col. 6, line 43 to col. 7, line 41; col. 10, lines 34 – 67).

6. Regarding claims 3, 7, 12, 31, 37, 42, Hellberg discloses a sampling rate converter (figs. 1 – 18) wherein the weighted approximation is performed with respect to a desired characteristic using a Remex Exchange algorithm considering a frequency response of the pre-filter (col. 6, line 43 to col. 7, line 41; col. 10, lines 34 – 67).

7. Regarding claims 4, 8, 13, 32, 38, 43, Hellberg discloses a sampling rate converter (figs. 1 – 18), further including a low bandpass filter preventing an aliasing component from occurring and folding from occurring when the sampling frequency of the input is lower than a sampling frequency of the output (col. 6, line 43 to col. 7, line 41; col. 10, lines 34 – 67).

8. Regarding claims 5, 9, 14, 33, 39, 44, Hellberg discloses a sampling rate converter (figs. 1 – 17), further including a low bandpass filter preventing an imaging component from occurring and a non-original frequency component from occurring when the sampling frequency of the input is higher than a sampling frequency of the output (col. 6, line 43 to col. 7, line 41; col. 10, lines 34 – 67).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 15 – 28, 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hellberg (US Patent Number 6,462,682) in view of Venkitachalam et al. (US Patent Number 6,542,094).

11. Regarding claim 15, Hellberg discloses a sampling rate converter (figs. 1 – 18) comprising: a plurality of convolution processing units (12, fig. 18) including pre-phase filters obtained by poly-phase decomposing a predetermined FIR filter and performing the convolution processing of input sample signals and the poly-phase filters decomposed to the poly-phases, corresponding convolution processing units and raising the sampling frequency U-fold(paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, lines 43 – 58; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67); a linear interpolation block for selecting two points of samples with respect to the signal by the adding means and finding the value at the required position from the linear interpolation (col. 1, lines 29 – 41), wherein the FIR filter is an FIR filter where an impulse response is expressed by a finite time length, the impulse response becomes the filter coefficient, and a transmission function  $H(z)$  is associated with a transmission function  $Z(z)$  of a pre-filter, and the filter coefficient is set by performing weighted approximation with respect to a desired characteristic in relation to a frequency response of the pre-filter (col. 1, lines 29 – 41; col. 1, lines 29 – 65; paragraph bridging col. 1 and 2; col. 3, lines 25 – 49; paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67 ). Hellberg does not specifically discloses a sampling rate converter that comprises a plurality of up-samplers. However, Venkitachalam et al., in a related field, discloses a sample rate

converter (figs. 1 –9 ) that comprises a plurality of up-samplers (col. 12, lines 5 - 7). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hellberg's system with that of Venkitachalam et al.'s system in order to improve the performance of the sample rate conversion and the combination of Hellberg and Venkitachalam et al. would achieve the same end result as the claimed invention.

12. Regarding claim 20, Hellberg discloses a sampling rate converter (figs. 1 – 18) comprising: a convolution processing unit (12, fig. 18) including poly-phase filters able to set different filter coefficients obtained by poly-phase decomposing a predetermined FIR filter and performing convolution processing of input sample signals and a poly-phase filter having a selected coefficient (paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, lines 43 – 58; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67), a selector for selecting two points of samples required for an output sample and selecting the coefficient of the corresponding poly-phase filter, and a linear interpolation block for finding the value at the required position from linear interpolation, wherein the FIR filter is an FIR filter where an impulse response is expressed by a finite time length, and the impulse response becomes the filter coefficient, and the filter coefficient is set by performing weighted approximation with respect to a desired characteristic using an algorithm adding a restrictive condition so as to pass any frequency point (col. 1, lines 29 – 41; col. 1, lines 29 – 65; paragraph bridging col. 1 and 2; col. 3, lines 25 – 49; paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67 ). Hellberg does not specifically disclose a sampling rate

converter that comprises a plurality of up-samplers. However, Venkitachalam et al., in a related field, discloses a sample rate converter (figs. 1 –9 ) that comprises a plurality of up-samplers (col. 12, lines 5 - 7). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hellberg's system with that of Venkitachalam et al.'s system in order to improve the performance of the sample rate conversion and the combination of Hellberg and Venkitachalam et al. would achieve the same end result as the claimed invention.

13. Regarding claim 55, Hellberg discloses a sampling rate converter (figs. 1 – 18) comprising: an up sampler (24, fig. 18) for inserting U-1 zero points between sample signals and raising a sampling frequency U-fold , a convolution processing unit (12, fig. 18) including an FIR filter and performing predetermined convolution processing with respect to an output signal of the up sampler (paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, lines 43 – 58; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67), and a linear interpolation block for selecting two points of samples with respect to the results of processing of the convolution processing unit and finding a value at a required position from the linear interpolation (col. 1, lines 29 – 41), wherein the FIR filter of the convolution processing unit is an FIR filter where an impulse response is expressed by a finite time length, the impulse response becomes a filter coefficient, and a transmission function  $H(z)$  is associated with a transmission function  $Z(z)$  of a pre-filter, and the filter coefficient is set by performing weighted approximation with respect to a desired characteristic in relation to a frequency response of the pre-filter (col. 1, lines 29 – 65; paragraph bridging col. 1 and 2; col. 3, lines 25 – 49;

paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67 ). Hellberg does not specifically disclose a sampling rate converter that comprises a plurality of up-samplers. However, Venkitachalam et al., in a related field, discloses a sample rate converter (figs. 1 – 9 ) that comprises a plurality of up-samplers (col. 12, lines 5 - 7). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hellberg's system with that of Venkitachalam et al.'s system in order to improve the performance of the sample rate conversion and the combination of Hellberg and Venkitachalam et al. would achieve the same end result as the claimed invention.

14. Regarding claim 56, Hellberg discloses an audio apparatus including a sampling rate converter (figs. 1 – 18) comprising: an up sampler (24, fig. 18) for inserting U-1 zero points between sample signals and raising a sampling frequency U-fold , a convolution processing unit (12, fig. 18) including an FIR filter and performing predetermined convolution processing with respect to an output signal of the up sampler (paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, lines 43 – 58; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67), and a linear interpolation block for selecting two points of samples with respect to the results of processing of the convolution processing unit and finding a value at a required position from the linear interpolation (col. 1, lines 29 – 41), wherein the FIR filter of the convolution processing unit is an FIR filter where an impulse response is expressed by a finite time length, the impulse response becomes a filter coefficient, and a transmission function  $H(z)$  is associated with a transmission function  $Z(z)$  of a pre-filter, and the filter coefficient is set

by performing weighted approximation with respect to a desired characteristic in relation to a frequency response of the pre-filter (col. 1, lines 29 – 65; paragraph bridging col. 1 and 2; col. 3, lines 25 – 49; paragraph bridging col. 3 and 4; paragraph bridging col. 4 and 5; col. 6, line 43 to col. 7, line 41; col. 10, lines 34 - 67 ). Hellberg does not specifically disclose a sampling rate converter that comprises a plurality of up-samplers. However, Venkitachalam et al., in a related field, discloses a sample rate converter (figs. 1 –9 ) that comprises a plurality of up-samplers (col. 12, lines 5 - 7). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hellberg's system with that of Venkitachalam et al.'s system in order to improve the performance of the sample rate conversion and the combination of Hellberg and Venkitachalam et al. would achieve the same end result as the claimed invention.

15. Regarding claims 16, 25, Hellberg discloses a sampling rate converter (figs. 1 – 18) wherein the filter coefficient is set based on an amplitude characteristic of an equalizer obtained by performing weighted approximation with respect to a desired characteristic in relation to a frequency response of the pre-filter col. 6, line 43 to col. 7, line 41; col. 10, lines 34 – 67).

16. Regarding claims 17, 21, 26, Hellberg discloses a sampling rate converter (figs. 1 – 18) wherein the weighted approximation is performed with respect to a desired characteristic using a Remex Exchange algorithm considering a frequency response of the pre-filter (col. 6, line 43 to col. 7, line 41; col. 10, lines 34 – 67).

17. Regarding claims 18, 22, 27, Hellberg discloses a sampling rate converter (figs. 1 – 18), further including a low bandpass filter preventing an aliasing component from occurring and folding from occurring when the sampling frequency of the input is lower than a sampling frequency of the output (col. 6, line 43 to col. 7, line 41; col. 10, lines 34 – 67).

18. Regarding claims 19, 23, 28, Hellberg discloses a sampling rate converter (figs. 1 – 17), further including a low bandpass filter preventing an imaging component from occurring and a non-original frequency component from occurring when the sampling frequency of the input is higher than a sampling frequency of the output (col. 6, line 43 to col. 7, line 41; col. 10, lines 34 – 67).

#### Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. (See PTO-892).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B. Jeanglaude whose telephone number is 571-272-1804. The examiner can normally be reached on Monday - Friday 7:30 A. M. - 5:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rexford Barnie can be reached on 571-272-7492. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

*Jean Bruner Jeanglaude*  
Jean Bruner Jeanglaude  
Primary Examiner  
October 8, 2007